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REVIEWS

Origin of the Bighorn Dolomite of Wyoming. By Eliot Black-Welder. Bull. Geol. Soc. Am., XXIV, 607-24, plates 8, December 22, 1913.

The Bighorn dolomite is widely distributed in northwestern Wyoming. Its fossils, mostly corals and crinoid stems, are rare and seldom well preserved, but indicate an Ordovician age, possibly including Silurian also. Chemically the formation is a very pure, normal dolomite, with very little terrigenous matter. Its weathered surface is characteristically coarsely pitted and fretted, owing, not to intermingling of siliceous with calcareous matter, but to compact fine-grained dolomite structures imbedded in a matrix of more coarsely crystalline and porous dolomite. The ill-defined branching patterns due to differential weathering are probably of organic origin, more likely representing banks of calcareous algae than plantlike animals. The obliteration of original organic structures is assigned to the process of crystallization of the dolomite, probably taking place almost simultaneously with deposition on the sea floor. The deposits were doubtless made in an epicontinental sea less than 100–120 meters deep.

R. C. M.

On Oceanic Deep-Sea Deposits of Central Borneo. By G. A. F. MOLENGRAAFF. Koninklijke Akademie van Wetenschappen te Amsterdam, Proceedings of the meeting Saturday, June 26, 1909. Pp. 7, map 1.

The Danau formation, which outcrops over an area of approximately 40,000 sq. km. in central Borneo, consists of cherts and hornstones formed almost entirely from the tests of Radiolaria. The character of the formation is very constant throughout the area. It consists of two types: the one, a true Radiolite, is semitransparent, hard, and brittle, with a color varying from milk-white to red or green, and is composed almost exclusively of the closely packed tests of Radiolaria; the other is an argillaceous chert, always red in color. The latter contains fewer Radiolaria and is analogous to modern deep-sea red clay deposits. The former corresponds to Radiolarian ooze. This large

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area of deep-sea deposits clearly indicates a very deep submergence of this region, probably during the Jurassic period. The deposits probably occur in geosynclines developed at the edge of the permanent Australasian continental segment.

R. C. M.

Glaciology of the South Orkneys: Scottish National Antarctic Expedition. By J. H. HARVEY PIRIE. Trans. Roy. Soc. Edin., XLIX, Part IV, pp. 831-61. Figs. 14, pls. 11, including one map.

The South Orkneys have such a climate that the line of perpetual snow is practically at sea-level; the summer temperatures are rarely above freezing-point. The mean annual temperature is 22°.7 F. The mean temperatures of the warmest and coldest months are 31°.5 and 12°.0 F., respectively. Foehn winds having passed over the central highlands sometimes produce as high a temperature in midwinter as in summertime.

The islands are almost entirely snow-covered throughout the year. The resulting glaciers are characteristically antarctic in type. The surfaces are practically all covered with névé, there are no surface moraines, crevasses are rare except at escarpments, the whole mass of the glaciers shows stratification, and the glaciers terminate in sea-cliffs. The land relief gives rise to various forms of glaciers:

- I. Ice-sheets, including:
 - a) Inland ice.
 - b) Ice caps of the Norwegian type.
 - c) Much of the Spitzbergen type of ice caps. These are ice sheets which conform to the topography, overlying both valley and hill.
- II. Glaciers properly so called.
 - a) Valley glaciers.
 - b) Suspended cliff glaciers.
- III. Piedmont glaciers.

These cover the low slopes between the mountain sides and the seashore. They end in cliffs from 15 to 20 meters high; their surfaces are uniform and snow-covered, having a gentle slope from the sea to the hills behind. They are fed by local precipitation and are not dependent upon snow-field reserves; they show well-marked horizontal stratification.

- IV. Glaciers of the coastal belt and shelf.
 - a) Shelf-ice, such as the Great Ross Barrier.
 - b) Ice-foot glaciers which lie in the zone between land and sea. They are composed of layers of névé ice formed in place chiefly of drift snow supplied by wind action.